

# Chapter 13

2/11/16

## Chemical Reactions (Rxns)

↳ Evidence of a chemical reaction (change):

- Gas Produced (Bubbles)
  - Color Change
  - Energy Released (Light, Heat, Sound)
  - Precipitate forms (Solid)
- ↳ Insoluble Compound

## Physical vs. Chemical Changes

### Physical:

↳ Observe w/out Changing the make up of a Substance

### Chemical:

↳ Observed while changing the chemical make up of a Substance (Chemical reaction)

### Reactants:

↳ Starting materials in a chemical reaction

### Products:

↳ What was produced in a reaction

### Yield Sign:

↳ ex:  $\text{Zn} + \text{HCl} \longrightarrow \text{ZnCl}_2 + \text{H}_2$

## Law of Conservation of Matter

↳ All chemical reactions must be balanced to not violate this law.

↳ Use coefficients (ex  $\rightarrow 2\text{HCl}$ ) to balance equations.

Chapter 13

Introduction to the study of the history of the world

1. The study of the history of the world is a branch of the social sciences

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## Types of Reactions

↳ Synthesis Reaction: Two reactants combining to make one product. ( $A + X \rightarrow AX$ )

ex: -  $Mg + O_2 \rightarrow MgO$  = Bright light (Bunsen Burner)

-  $MgO + H_2O \rightarrow Mg(OH)_2$  = Pink water (stirred, added pink)

-  $CO_2 + H_2O \rightarrow H_2CO_3$  = Blue  $\rightarrow$  yellow (Ph solution drops)

↳ Decomposition: One reactant with multiple products. ( $AX \rightarrow A + X$ )

ex: -  $CuCO_3 \xrightarrow{\Delta \text{ heat}} CuO + CO_2$  = Blue powder  $\rightarrow$  Dark blue/black liquid (Bunsen burner)

-  $2KClO_3 \xrightarrow{\Delta} 2KCl + 3O_2$  =  $KClO_3$  + gummy bear = huge flame in test tube

↳ Single Replacement: ( $A + BX \rightarrow AX + B$ ) Change of reactants. (Switching)

ex: -  $2Al + 3CuCl_2 \rightarrow 2AlCl_3 + 3Cu$  =

-  $Zn + HCl \rightarrow ZnCl_2 + H_2$  = Zinc + HCl in flask = gas into balloon, bubbles, stem

-  $Cl_2 + LiBr \rightarrow LiCl + Br_2$

↳ Double Replacement: Two reactants switch ( $AX + BY \rightarrow AY + BX$ )

ex: -  $Na_2CO_3 + CaCl_2 \rightarrow 2NaCl + CaCO_3 \downarrow$   $\rightarrow$  precipitate (solid)

↳ Combustion: Burning ( $O_2$  + fuel)

ex: -  $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$

- Hydrocarbon fuel +  $O_2 \rightarrow CO_2 + H_2O$

